

Patent claims

- 5 1. A method for synchronizing the position (LH) of
the steering handle (8) and the steering angle (LW)
which has been set at the steered vehicle wheels (1)
for steering with a relationship function which can be
set between the handle position (LH) and the steering
10 angle (LW) by means of an open-loop or closed-loop
control device (13; 18), characterized in that after
the open-loop or closed-loop control device (13; 18)
has been activated the instantaneous handle position
15 (LH) and the instantaneous steering angle (LW) are
compared taking into account the instantaneously set
relationship function, and in the case of a deviation
(S) in position a relative adjustment is carried out in
order to reduce the deviation (S) in position between
the handle position (LH) and the steering angle (LW).
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2. The method as claimed in claim 1, characterized in
that the relative adjustment takes place only if an
interrogation criterion is fulfilled after or during
the activation of the open-loop control device.
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3. The method as claimed in claim 1 or 2,
characterized in that, in particular in the case of a
vehicle longitudinal velocity which is lower than a
30 predefinable velocity threshold value, the relative
adjustment takes place only while the steering handle
(8) is being moved manually by the driver.
4. The method as claimed in one of claims 1 to 3,
characterized in that the relative adjustment takes
35 place in an incremental cyclical fashion, in particular
in the case of a vehicle longitudinal velocity which is
higher than a predefinable velocity threshold value,
and one adjustment step is carried out per adjustment
cycle until the deviation (S) in position is

approximately zero.

5. The method as claimed in claim 4, characterized in
that the reduction in the deviation (S) in position per
5 adjustment cycle is limited to, or defined as, a
predefined percentage of the respective current
deviation (S) in position.

10 6. The method as claimed in one of claims 1 to 5,
characterized by the definition of an adjustment time
period after whose expiry the deviation (S) in position
has to have reached a value which in absolute terms is
less than or equal to a predefined deviation threshold
value.

15 7. Method according to one of claims 1 to 6,
characterized in that the relative adjustment takes
place with a synchronization speed at the steered
vehicle wheels (1) which is predefined or limited to a
20 maximum value.

25 8. The method as claimed in one of claims 1 to 7,
characterized in that in the case of a vehicle
longitudinal velocity which is less than a predefinable
velocity threshold value, the relative adjustment takes
place only if the direction of the change in the handle
position corresponds to the direction in which the
relative adjustment is to take place.

30 9. The method as claimed in one of claims 1 to 8
characterized in that after the control device (13) has
been activated the setpoint position (LH_{soll}) of the
steering handle (8) which corresponds to the
instantaneous steering angle (LW) for the
35 instantaneously set steering transmission ratio is
determined, wherein the deviation (S) in position
results from the difference between the instantaneous
handle position (LH_{hist}) and the setpoint handle position
(LH_{soll}).

10. The method as claimed in one of claims 1 to 9, characterized in that the relative adjustment takes place as a function of parameters.

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11. The method as claimed in claim 10, characterized in that the relative adjustment takes place as a function of a manual force which is effective at the steering handle (8) and/or of the instantaneous deflection of the steering handle (8) out of its normal position corresponding to the straight-ahead position of the steered vehicle wheels (1) and/or of the instantaneous deflection of the steered vehicle wheels (1) out of their straight-ahead position and/or of the absolute value of the deviation (S) in position and/or of a variable which characterizes the lateral dynamics or longitudinal dynamics of the vehicle and/or of the longitudinal velocity of the vehicle and/or of time.

12. A device for carrying out the method as claimed in one of claims 1 to 11, having means (11; 19) for determining the position (LH) of a steering handle (8) of a vehicle, having means (12; 20) for determining the steering angle (LW) of the steered vehicle wheels (1) and having an open-loop or closed-loop control device (13; 18) for setting the steering angle (LW) as a function of the position (LH) of the steering handle (8) and a relationship function which can be set between the handle position (LH) and the steering angle (LW), characterized in that after the open-loop or closed-loop control device (13; 18) has been activated it compares the instantaneous handle position (LH) and the instantaneous steering angle (LW) taking into account the instantaneously set relationship function between the handle position (LH) and steering angle (LW), and in the case of a deviation (S) in position it carries out a relative adjustment in order to reduce the deviation (S) in position between the handle position (LH) and the steering angle (LW).